GEOFINANCIAL ANALYTICS

June 15, 2022

Vanessa Countryman, Secretary
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-0609
Via email to *rule-comments@sec.gov*

RE: Request for Comment #114: *GHG Emissions Methodology and Related Instructions*
The Enhancement and Standardization of Climate-Related Disclosures for Investors
File No. S7-10-22

Dear Securities and Exchange Commissioners,

As the chief scientist of a provider of satellite-based direct measurement of greenhouse gas emissions to the financial industry, I am concerned that the Proposed Rule regarding GHG Emissions Methodology is based on flawed and outdated information that will enshrine an increasingly obsolescent, non-observational, "bottoms up" methodology of the GHG Protocol. This is likely to result in a significant underreporting of the emissions of methane, the most potent greenhouse gas[1], thus materially reducing our chances of averting catastrophic climate change.

In particular, we take issue with the following statement in the Proposed Rules:

> Request for Comment #114
> Section 2c The Selection and Disclosure of a GHG Emissions Calculation Approach, including Emissions Factors (p. 192)
>
> "While the direct measurement of GHG emissions from a source by monitoring concentration and flow rate is likely to yield the most accurate calculations, **due to the expense of the direct monitoring of emissions [our emphasis]**, an acceptable and common method for calculating emissions involves the application of published emission factors to the total amount of purchased fuel consumed by a particular source." [510]

The Proposed Rule does not take into full account recent advances in satellite-based detection and attribution of greenhouse gas emissions from point sources. These satellite measurements make regular and repeated direct measurements of methane plumes and methane concentration in the atmosphere[2], making them cost effective and more accurate and timely than emission calculation tools based on the EPA's emission factors.[3]

As a result of recent advances in satellite data analytics, expense is no longer a limiting factor for direct measurement of methane emissions. Instead of deploying relatively expensive ground monitoring sensors to measure concentration and flow, you can now detect such emissions from space with sufficient spatial and temporal resolution to attribute them with confidence to the facilities that are leaking or venting. To effectively ignore the availability of such advanced cost-effective technology is short-sighted and misguided.

The Proposed Rule, on the other hand, perpetuates the obsolescent emission factors methodology of the GHG Protocol which is based questionable assumptions and can suffer from inadequate sampling (e.g., non-representative of the population of sites and inaccurate counts and locations of sites, facilities, and equipment).[4] As is well documented elsewhere[5], the GHG Protocol has serious conceptual errors.

Further, the GHG Protocol methodology does not properly account for emissions from infrequent, high-emitting occurrences and therefore significantly underestimate emissions. For example, direct measurement studies found that methane emissions were 60% higher than EPA estimates using the “bottoms up” emission factor methodology also adopted by the GHG Protocol.[6] More recent aerial surveys (2022) found that methane leaks in the Permian Basin far exceed current Environmental Protection Agency (EPA) Greenhouse Gas Inventory (GHGI) estimates.[7]

These discrepancies exist in part because current emission factor-based inventory methods like the GHG Protocol miss emissions that occur during abnormal operating conditions which only direct measurement can capture. This is a particularly critical shortcoming since, across many studies, the top 5% of sources contribute over 50% of emissions.[5]

We would be pleased to provide additional information and testimony upon request including recent price/performance advances in satellite direct measurement which now make it a cost-effective, more accurate – and much more timely – alternative to the obsolescent emission factors approach of the GHG Protocol. The price/performance advantages of satellite direct measurement will become even more pronounced in the coming 12-18 months and thereafter.

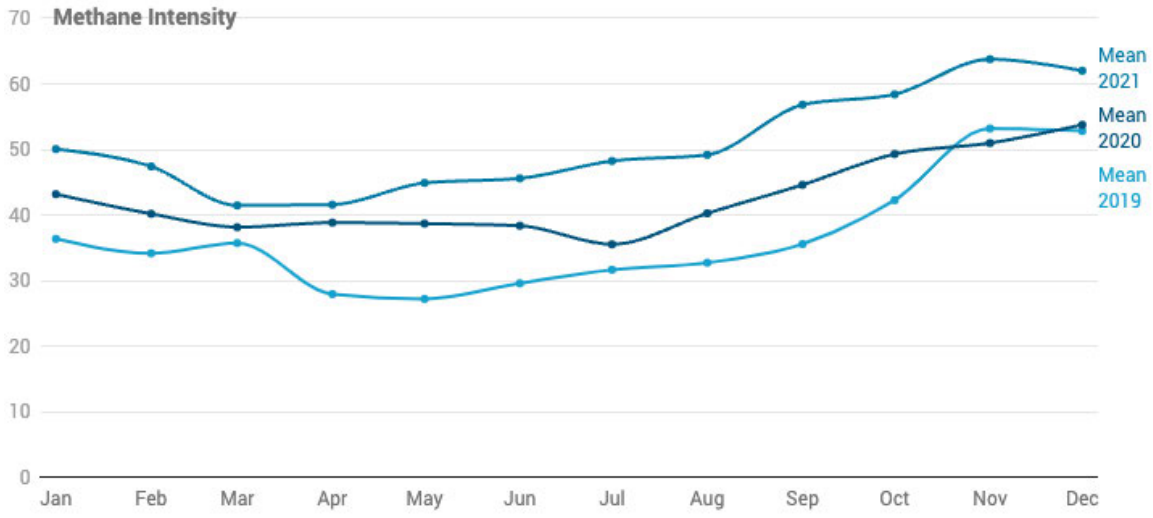
Sincerely,

Jessica J. Hellmann, Ph.D
Chief Scientist
[redacted]

Footnotes

[1] It is now widely accepted that stopping methane leaks represents the single best action we can take in the near term to avert catastrophic climate change. Methane emissions must be cut by half this decade to avoid the worst effects of climate change, says the UN. Unfortunately, direct satellite measurements confirm that the methane intensity of the 100 producers worldwide is increasing – not declining.

Observed Methane Intensity of Top 100 Listed Energy Producers Worldwide. Direct satellite measurement of onshore wells in North America, Brazil, Australia and Europe over last three years as of December 31, 2021.



0-100 normalized scale of methane emissions intensity via direct satellite measurement. Scores > 0 represent net contribution to mean background level of atmospheric methane.

Source: MethaneScan® | Creative Commons CC BY-NC-ND 4.0 • Created with Datawrapper

[2] For example, Geofinancial Analytics (Geofinancial.com) has developed technology for tracking methane emissions worldwide via satellite and comparing them to the companies' self-reported emissions. This automated stream of transparency data on millions of emission point sources worldwide, called MethaneScan®, is designed to assess sustainability leaders, risers and laggards as well as greenwashing in the energy sector. In particular, the data exposes misleading self-reported information and incomplete disclosures. Details also are provided on abandoned wells and emissions trends, all at a price competitive with "bottom up" emissions factor methods.

[3] Emission factor is a coefficient that relates the activity data to the amount of chemical compound which is the source of later emissions. Emission factors are often based on sample data, averaged to develop a representative rate of emission for a given activity level under a given set of operating conditions.

[4] Brandt, A. R.; Heath, G.; Kort, E.; O'Sullivan, F.; Pétron, G.; Jordaan, S. M.; Tans, P.; Wilcox, J.; Gopstein, A.; Arent, D.; Wofsy, S.; Brown, N.; Bradley, R.; Stucky, G.; Eardley, D.; Harriss, R. *Methane leaks from North American natural gas systems.* Science 2014, 343, 733– 735, DOI: 10.1126/science.1247045

[5] Robert S. Kaplan and Karthik Ramanna, *Accounting for Climate Change*, Harvard Business Review, November - December 2021; https://hbr.org/2021/11/accounting-for-climate-change

[6] Daniel Zavala-Araiza, David R. Lyon, Ramón A. Alvarez et.al, *Reconciling divergent estimates of oil and gas methane emissions* (PNAS, December 7, 2015)

[7] Yuanlei Chen*, Evan D. Sherwin, Elena S.F. Berman, Brian B. Jones, Matthew P. Gordon, Erin B. Wetherley, Eric A. Kort, and Adam R. Brandt; *Quantifying Regional Methane Emissions in the New Mexico Permian Basin with a Comprehensive Aerial Survey.* Environ. Sci. Technol. 2022, 56, 7, 4317–4323. Publication Date: March 23, 2022. https://doi.org/10.1021/acs.est.1c06458